Isamu UMEZAKI*: Notes on some marine algae from Japan (2)

梅崎 勇*: 日本産海藻ノート (2)

5. **Schizymenia dubyi** (Chauv.) J. Agardh According to H. Kylin (Über die Entwicklungsgeschichte der Florideen, in Lunds Univ. Årsskr., N. F. Avd. 2, **26** (6): 40, f. 26 A, 1930), working on the spermatangium of *Schizymenia pacifica* (Kylin) Kylin, two spermatia are produced from an apical cell of cortex by its direct division. J. Tokida and T. Masaki (Studies on the reproductive organs of red algae III. On the structure and development of female organs in *Schizymenia dubyi*, *Gymnogongrus flabelliformis*, and *Rhodymenia pertusa*, in Bull. Fac. Fish., Hokkaido Univ. **10**: 87-88, f. 1-4, 1959), who studied the development of cystocarps in *Schizymenia dubyi*, have not observed its spermatangia. *Schizymenia dubyi* is a very common alga in Wakasa Bay along the Japan Sea coast, usually occurring in spring and early summer. In April 1962 the present writer collected a large number of male plants of the species from Mikuni, Fukui Prefecture, the northernmost locality of Wakasa Bay. The writer has found that spermatangial formation in the species is very different from that of *Schizymenia pacifica* investigated by Kylin (l. c.). *Schizymenia dubyi* is dioecious. The spermatangia are produced on the whole surface of the male plant excepting its basal part. The developmental process of a spermatangium is as follows. An apical cell of a cortical thread is divided in an oblique longitudinal plane leaving a smaller upper and larger lower cell. The lower cell is again divided in a upper and basal cell, of which the basal becomes a stalk cell. The upper two cells thus formed function as spermatangial mother cells. The upper part of the mother cell is again obliquely divided, producing one or two spermatangia. Each spermatangium contains a single spermatium within it. In vertical view the spermatangial mother cell is ellipsoidal in shape and measures 3-4 μ broad and 6-7.5 μ long; the spermatangium is nearly spherical and measures 4-5 μ broad; and the spermatium is spherical and has a size of 3 μ. Sometimes another mode of spermatangial development is observed. An apical cell of a

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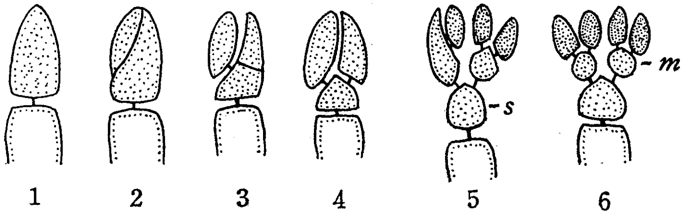


Fig. 4. *Schizymenia dubyi* (Chauv.) J. Ag. Showing successive stages in development of a spermatangium. *m*. Spermatangial mother cell; *s*. Stalk cell. ×800.

cortical thread is divided by an oblique transverse plane through its middle in two cells, of which the upper one develops into a spermatangial mother cell, and proceeds in its normal development. (Fig. 4).

Japanese name: Benisunago.

Habitat and locality: On sheltered rocks 0.5-1 meter below low tide level. Bakuchi-misaki, Ônyu and Sanbon-matsuhana, Maizuru Bay, Kyoto Pref. Leg. Yoneda and Umezaki, 18 May 1949; leg. Yoneda and Umezaki, 10 Aug. 1949; leg. Yoneda, 8 Apr. 1950; Umezaki *2991*, leg. Umezaki, 28 Mar. 1962; Umezaki *2019*, leg. Umezaki, 19, Jun. 1962. Mikuni, Fukui Pref. Umezaki *3022*, leg. Umezaki, 20 Apr. 1962; Umezaki *3038*, leg. Umezaki, 3 Jul. 1962.

6. **Gymnogongrus flabelliformis** Harvey The cystocarpic formation of *Gymnogongrus flabelliformis* has been studied by J. Tokida and T. Masaki (l. c.). So far as the present writer is aware no one has investigated the formation of spermatangia of the species. The writer was fortunately successful in collecting a large number of plants bearing spermatangia, in early November in 1963, from Nagahama, Maizuru Bay, Kyoto Prefecture, when cystocarpic plants were also found. Spermatangia are in sori, which form a continuous layer on the surface of the plant with the exception of the lower segments. An apical cell of a cortical thread gradually elongates itself and develops into a spermatangial mother cell, ultimately reaching a size of 7.5-12.5 $\mu \times 2.5 \mu$, two or three times as long as the original cell. The spermatangium produces a spermatium on its apex. When mature the spermatium is discharged through a slender tube the top of which has an aperture. The tube or the discharging path of spermatia, is formed by elongation of the mother membrane of the spermatangium. It is long, colorless, and cylindrical. After liberation of the first spermatium second and third ones may be produced from the remaining spermatangial mother cell material. (Fig. 5).

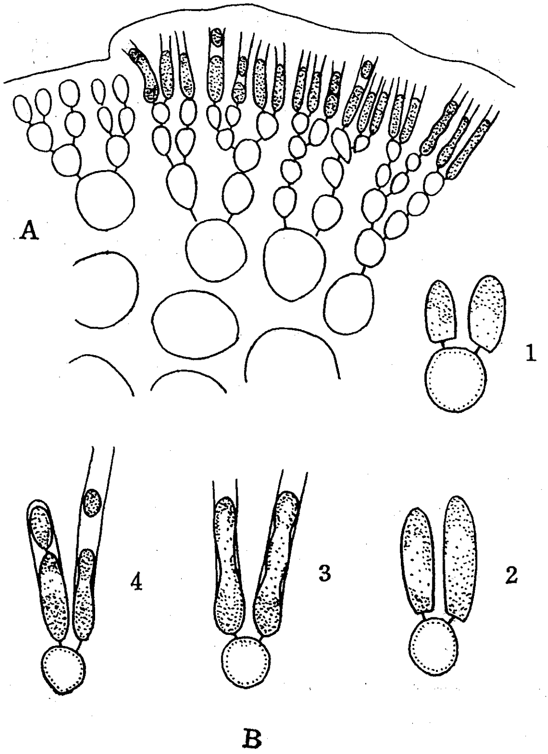


Fig. 5. *Gymnogongrus flabelliformis* Harvey. A. Cross section of cortex bearing spermatangia. ×400. B. Successive stages in development of a spermatangium. ×800.

Japanese name: Okitsu-nori.

Habitat and locality: On rocks in the littoral belt. Nagahama, Maizuru Bay, Kyoto Pref. Umezaki *3631*, leg. Umezaki, 6 Nov. 1963.

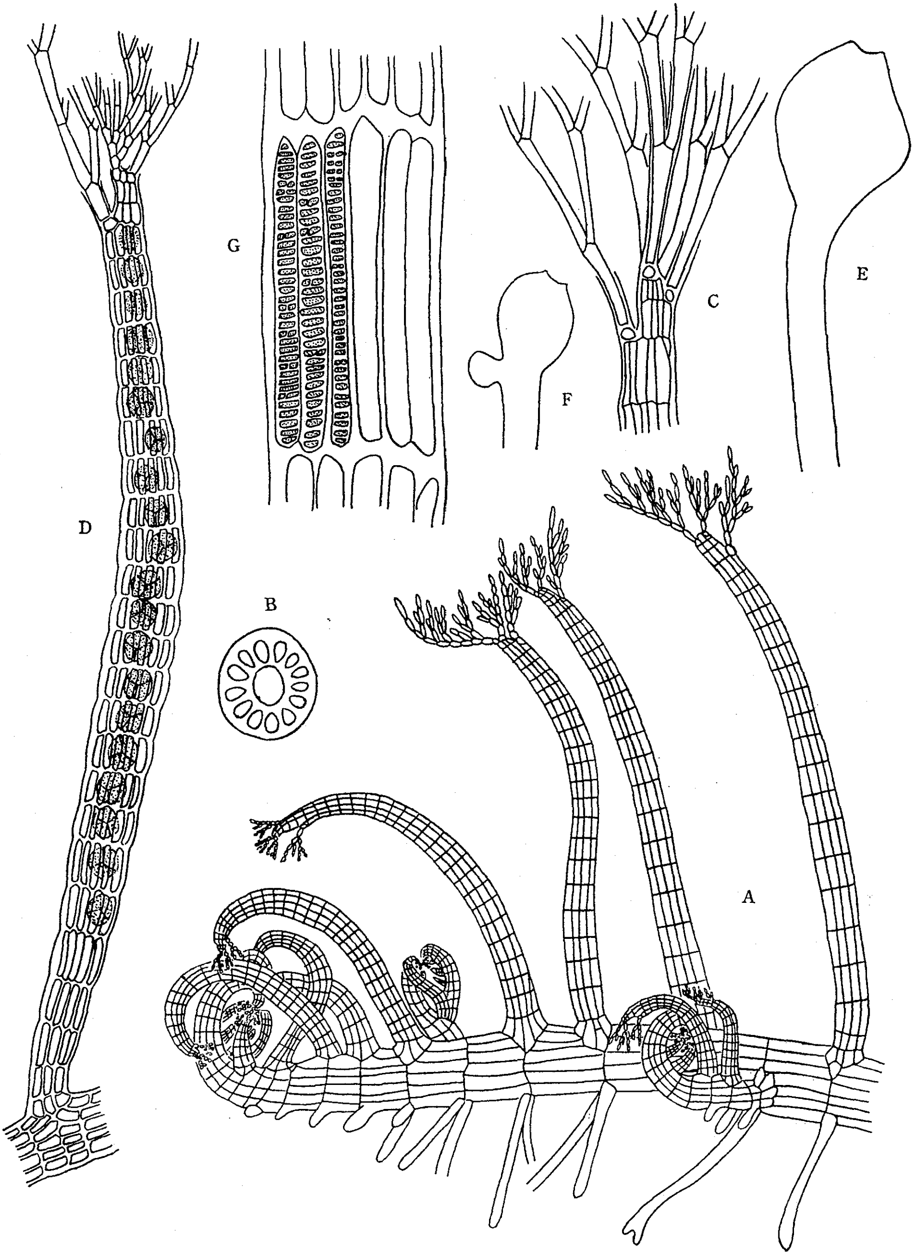
7. **Ceramium fimbriatum** Setch. et Gardn. The minute alga *Ceramium fimbriatum* has been found creeping on the upper surfaces of *Padina arborescens* Holmes which was collected from Takahama, Fukui Prefecture. The species is characterized by one-celled ellipsoidal processes arising from each cortical band. The processes measure 35–50 μ broad and 50–80 μ long. No reproductive organs have been found in the present specimens. The type locality of the species is Eureka near La Paz, Lower California and it is probably of a tropical or subtropical origin. In Japan, Y. Nakamura (Species of the genera *Ceramium* and

Campylaephora, especially those of northern Japan, in Sci. Pap. Inst. Algol. Res., Fac. Sci., Hokkaido Univ. **5** (2): 119–180, pls. 1–14, 1965) has studied the species from Oruzako, Kyushu (leg. M. Kurogi), Arashidomari, Izu (leg. Segawa) and Okinawa (leg. S. Kamura) and proposed to call it Fusatsuki-igisu in Japanese. According to his report only the specimen from Okinawa has tetrasporangia. Four years ago the present writer sent to the late Dr. E. Y. Dawson his specimens from Takahama and Dr. Dawson answered that this alga agreed mostly with materials from the Pacific Mexican coast, the Southern Marshall Islands and Vietnam and that the habit on *Padina arborescens* closely resembled the growth on *Padina durvilliae* on the Pacific Mexican coast. In the summer of 1962, the specimens of Dr. Y. Nakamura mentioned above were examined and found to be superficially identical. In December 1965, the species was again found growing on *Gymnogongrus flabelliformis* at Takahama. This discovery from Wakasa Bay is probably the northernmost record on the Japanese coast as well as in the Northern Pacific for the distribution of the species. The species was also collected in April 1965 from Shirahama, Wakayama, the middle part of Honshu along the Pacific coast.

Japanese name: Fusatsuki-igisu.

Habitat and locality: Epiphytic on *Padina arborescens*. Takahama, Fukui Pref. Umezaki *2890*, leg. Umezaki, 10 Jan. 1962; On *Gymnogongrus flabelliformis*, Umezaki *3920*, leg. Umezaki, 8 Dec. 1965. On *Sargassum patens*. Shirahama, Wakayama Pref. Umezaki *3850*, leg. Umezaki, 16 Apr. 1965.

8. **Herposiphonia caespitosa** Tseng Since *Herposiphonia caespitosa* was reported as new from Hong Kong in 1944 by C. K. Tseng (Marine algae of Hong Kong, V. The genus *Herposiphonia*, in Pap. Michigan Acad. Sci., Arts and Lett. **29**: 58, pl. I, 1944), it has not been detected by phycologists, so far as the present writer is aware. Collections from Wakasa Bay along the Japan Sea coast form new records for the species. The species has been collected from several localities of the Bay from May to November, being especially plentiful in the summer season. Three short branches arising from the prostrate filament alternate with two long branches, usually in regular manner, always simple, and are from 2 mm to 5 mm long. They consist of 22–30 articulations. The prostrate filament grows attached to the substratum by means of its cellular rhizoids. The filament measures 100–200 μ in diameter. The rhizoids are issued generally in pairs, sometimes single or three together, from each articulation of the prostrate filament. They measure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2.5–4.5 μ in diameter and 40–550 μ in length and are provided with an irregularly shaped disc at their ends. The trichoblasts are branched in subdichotomous manner, usually fiive or six times, and provided with a large basal cell of about 20 μ. The short branches bearing cystocarps are always shorter in length and fewer in articulation number than those of tetrasporic ones, which attain 2–5 mm long. On the other hand, ones bearing tetrasporangia have from 22 to 30 articulations. The tetrasporangia are formed along the whole length of a short branch excepting its several basal articulations and arranged in a longitudinal series. The sporangia are singly produced in each articulation and divided in tripartite manner. They have a diameter of 40–60 μ. The cystocarps are urceolate in shape when mature and measure 350–410 μ broad and 380–550 μ long including the necks of about 60 μ thick. They are formed on the tops of short branches, usually singly. If two are together, one is always much smaller in size than the other; the smaller one is atrophied. The chromatophores, as described by Tseng (l. c.), are short linear in shape, being arranged in zonate manner densely packed within the cell. No spermatangia have been found in the present collections. (Fig. 6).

Japanese name: Iwa-himegoke (new name).

Habitat and locality: On rocks along high tide level. Kanmuri-jima, off Maizuru Bay, Kyoto Pref. Umezaki *2809*, leg. Umezaki, 27 May 1958; Umezaki *2812*, leg. Umezaki, 18 May 1952; Umezaki *2813*, leg. Umezaki, 5 July 1956. Kanega-misaki, Maizuru Bay, Kyoto Pref. Umezaki *2814*, leg. Umezaki, 30 Sept. 1949. Bakuchi-misaki, Maizuru Bay, Kyoto Pref. Umezaki *2815*, leg. Umezaki, 11 Nov. 1949; Umezaki *2817*, leg. Umezaki, 23 Jun. 1950. Takahama, Fukui Pref. Umezaki *2816*, leg. Umezaki, 22 Nov. 1949. Kato, Obama Bay, Fukui Pref. Umezaki *2818*, leg. Umezaki, 9 Jul. 1950.

The writer wishes to express his heartfelt thanks to Dr. I. A. Abbott of Hopkins Marine Station, Pacific Grove, California for valuable advice and reading of the manuscript.

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これまで知られなかったベニスナゴ (*Schizymenia dubyi*) に精子器の存在が明らかに

Fig. 6. ***Herposiphonia caespitosa*** Tseng. A. Terminal part of a plant. ×20. B. Cross section of a short branch. ×40. C. Terminal part of a short branch, showing the branching of trichoblasts. ×75. D. Short branch bearing a tetrasporangium within each articulation. ×35. E. Top of a short branch bearing one cystocarp. ×35. F. Top of a short branch bearing two cystocarps, one of which is atrophied. ×30. G. Articulations in surface view, showing chromatophores arranged in zonate within cells. ×170.

され，それが，Kylin (1930) によって報告された *Schizymenia pacifica* とは違った発達様式によって形成されることを明らかにした。オキツノリ (*Gymnogongrus flabelliformis*) にも精子器がみつけられ，その発達様式を研究した。熱帯または亜熱帯起原のものと思われるフサツキイギス (*Ceramium fimbriatum*) が，Nakamura (1965) の報告の他に，和歌山県白浜および福井県高浜からも採集された。1944年に香港から報告されたイワヒメゴケ (新称) (*Herposiphonia caespitosa*) が若狭湾各地から発見された。日本新産種である。

○高等植物分布資料 (56) Materials for the distribution of vascular plants in Japan (56)

○オクノフウリンウメモドキ *Ilex geniculata* Maxim. var. *glabra* Okuyama　林学科2年目の学生に，宿題として腊葉を提出させている。この中の一つにオクノフウリンウメモドキがあった。昭和34年7月25日，木村行夫君の北海道函館山の採集である。新潟県弥彦山をタイプとして書かれたものであるが，その分布は上野，岩代，越後，羽前で，私の採集した場所は羽黒山，湯殿山，月山，母狩山，以東岳，山形大学演習林（東田川郡朝日村大字上名川），西置賜郡小国町大字舟渡等である。いずれの場所でもあまり個体数は多くない。演習林は 750 ha あるが，この中で6本位しかない。山形県では稍稀産の植物である。しかも秋田県や青森県では未知のものではないかと思われるのである。津軽海峡をこした函館山に産することは興味あることである。

（山形大学農学部　森　邦彦）

○ナカボノウルシ *Sphenoclea zeylanica* Gaertn. は熱帯各地の水湿地に広く分布する一年草で，台湾にはかなり前から野生するのが知れていて，上記の和名がついている。1965年8月25日に熊本大学薬学部の浜田善利氏はこれを熊本県玉名郡，小島の小川中に生えているのを採集せられた。帰化植物の新らしい一種が加わったことになる。氏のお話しによると菊地川の下流付近の田圃の間に生えていて半ば川中にあって，茎の上半部が水上に出ていて，花は白く，葉は白緑色をおびる。周囲に農家はあるが種子が人為的に運ばれてくる様な所ではないが，渡り鳥は訪れるらしい。全体はタデを思わせる様な概形で，軟らかく，少し多肉で，皮針形の全辺葉を互生し，花序はヤマゴボウの幼穂を思わせる所がある。花は小さく，無柄で蜜に花穂上につき，花冠は小さい。渡辺清彦博士著：植物分類学に図解されている。以前はキキョウ科に入られていたが，近頃はキキョウ科の隣りに独立のナガボノウルシ科 (Sphenocleaceae) にされることが多い。花柱に花粉を集める毛状粉がないのと，花冠の裂片が瓦状に並ぶことが主な区別点になっている。一属1～2種があると報告されている。標本は国立科学博物館標本庫に入れておく。

（国立科学博物館　大井次三郎）